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By: Susan M. Foley

PATENT  
Attorney Docket No. 080129-000100

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the application of:

JEREMY S. LEE et al.

Application No.: Unassigned  
Parent Application: 09/213,052

Filed: Herewith  
Parent Filed: December 16, 1998

For: BIOLOGICALLY ACTIVE  
METAL-CONTAINING NUCLEIC  
ACIDS

Examiner: Unassigned

Art Unit: Unassigned

**INFORMATION DISCLOSURE  
STATEMENT**



Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Applicants direct the Examiner's attention to the references below, also listed on the accompanying Form PTO-1449. Copies were provided in the parent application (USSN 09/213,052) and therefore are not enclosed herewith pursuant to 37 CFR 1.98(d), unless otherwise indicated.

The following U.S. Patents are set forth below by issue date.

AA. U.S. Patent No. 4,562,157 issued on December 31, 1985 to Lowe et al.

AB. U.S. Patent No. 5,278,043 issued on January 11, 1994 to Bannwarth et al.

AC. U.S. Patent No. 5,556,752 issued on September 17, 1996 to Lockhart et al.

AD. U.S. Patent No. 5,561,071 issued on October 1, 1996 to Hollenberg et al.

AE. U.S. Patent No. 5,591,578 issued on January 7, 1997 to Meade et al.

AF. U.S. Patent No. 5,679,647 issued on October 21, 1997 to Carson et al.

- AG. U.S. Patent No. 5,705,348 issued on January 6, 1998 to Meade et al.
- AH. U.S. Patent No. 5,770,369 issued on June 23, 1998 to Meade et al.
- AI. U.S. Patent No. 5,780,234 issued on July 14, 1998 to Meade et al.
- AJ. U.S. Patent No. 5,780,448 issued on July 14, 1998 to Davis et al.
- AK. U.S. Patent No. 5,804,566 issued on September 8, 1998 to Carson et al.
- AL. U.S. Patent No. 5,824,473 issued on October 20, 1998 to Meade et al.
- AM. U.S. Patent No. 5,830,877 issued on November 3, 1998 to Carson et al.

The following articles are set forth by the indicated year of publication date:

- AN. DeMeester et al., "X-Ray Evidence for Adenine N(1)-Metal Bonding in a Cobalt-9-Methyladenine Complex," *Biochem. Biophys. Acta*, 324:301-303 (1973).
- AO. McCall et al., "Crystal Structure of a Zinc-(9-Methyladenine) Complex with N1 as the Preferred Binding Site," *Biochem. Biophys. Acta*, 390:137-139 (1975).
- AP. Swaminathan et al., "The Crystal Structures of Metal Complexes of Nucleic Acids and Their Constituents," *CRC Crit. Rev. Biochem. Mol. Biol.*, 14:245-336 (1979).
- AQ. Braun et al., "Immunogenic Duplex Nucleic Acids are Nuclease Resistant," *J. Immunol.*, 141(6):2084-2089 (1988).
- AR. Lever, *Inorganic Electronic Spectroscopy*, Elsevier, 503-542 (1988).
- AS. Cheung, "Resonance Energy Transfer," *Topics in Fluorescence Spectroscopy, Vol. 2: Principles*, Plenum (J.R. Lakowicz, ed.), 127-176 (1991).
- AT. Palecek, "Local Supercoil-Stabilized DNA Structures," *CRC Crit. Rev. Biochem. Mol. Biol.*, 26(2):151-226 (1991).
- AU. Yagil, "Paranemic Structures of DNA and Their Role in DNA Unwinding," *CRC Crit. Rev. Biochem. Mol. Biol.*, 26(516):475-559 (1991).
- AV. Clegg, "Fluorescence Resonance Energy Transfer and Nucleic Acids," *Methods in Enzymology*, 211:353-371 (1992).
- AW. Roesler et al., "The Liver-Enriched Transcription Factor D-Site-Binding Protein Activates the Promoter of the Phosphoenolpyruvate Carboxykinase Gene in Hepatoma Cells," *J. Biol. Chem.*, 267(29):21235-21243 (1992).

- AX. Brunger, *X-PLOR Manual, Version 3.1: A System for X-Ray Crystallography and NMR*, Yale University Press, (1993).
- AY. Lee et al., "A Cooperative Conformational Change in Duplex DNA Induced by  $Zn^{2+}$  and Other Divalent Metal Ions," *Biochem. Cell Biol.*, 71:162-168 (1993).
- AZ. Lilley et al., "The Structure of the Four-Way Junction in DNA," *Annu. Rev. Biophys. Biomol. Struct.*, 22:299-328 (1993).
- BA. Murphy et al., "Long-Range Photoinduced Electron Transfer Through a DNA Helix," *Science*, 262:1025-1029 (1993).
- BB. Seeman et al., "DNA Branched Junctions," *Annu. Rev. Biophys. Biomol. Struct.*, 23:53-86 (1994).
- BC. Kessler, *Nonisotopic Probing, Blotting and Sequencing*, L.J. Kricka, Ed., Academic Press, 3-40 (1995).
- BD. Arkin et al., "Rates of DNA-Mediated Electron Transfer Between Metallointercalators," *Science*, 273:475-480 (1996).
- BE. Hall et al., "Oxidative DNA Damage Through Long-Range Electron Transfer," *Nature*, 382:731-735 (1996).
- BF. Dandliker et al., "Oxidative Thymine Dimer Repair in the DNA Helix," *Science*, 275:1465-1468, (1997).
- BG. Lewis et al., "Distance-Dependent Electron Transfer in DNA Hairpins," *Science*, 277:673-676 (1997).
- BH. Taubes, "Double Helix Does Chemistry at a Distance-But How?" *Science*, 275:1420-1421 (1997).
- BI. Haugland, *Handbook of Fluorescent Probes and Research Chemicals*, 6<sup>th</sup> Ed., 157.

It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

Applicants believe that their invention as claimed is patentable over the above references taken alone or in any combination. However, Applicants reserve the right to demonstrate that their claimed invention was made prior to any one or more of the above-

identified references. No inference should be drawn as to the pertinence of the references based on the order in which they are presented.

Applicants respectfully request that the Examiner review the foregoing references to make his own determination of the patentability of the present invention and that the references be made of record in the file of this application.

The Information Disclosure Statement is being filed before the mailing date of the first Office Action. Although no fee is believed to be due, the Commissioner is hereby authorized to charge any fees necessitated by this transmittal to Townsend and Townsend Deposit Account No. 20-1430.

Respectfully submitted,

Dated: 1/31/02

By: Mark G. Sandbaken  
Mark G. Sandbaken  
Reg. No. 39,354

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, CA 94111  
Tel: (206) 467-9600  
Fax: (415) 576-0300

FORM PTO-1449 (Modified)	Attorney Docket No.: 080129-000100	Application No.: Unassigned
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Applicant: Jeremy S. Lee et al.	
	Filing Date: Herewith	Group: Unassigned

JC868 U.S. P.O.  
10/06/1979  
01/31/02

Reference Designation	U.S. PATENT DOCUMENTS
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Examiner Initial	Document No.	Date	Name	Class	Sub-class	Filing Date (If Appropriate)
___ AA.	4,562,157	12/31/85	Lowe et al.			
___ AB.	5,278,043	1/11/94	Bannwarth et al.			
___ AC.	5,556,752	9/17/96	Lockhart et al.			
___ AD.	5,561,071	10/01/96	Hollenberg et al.			
___ AE.	5,591,578	1/07/97	Meade et al.			
___ AF.	5,679,647	10/21/97	Carson et al.			
___ AG.	5,705,348	1/06/98	Meade et al.			
___ AH.	5,770,369	6/23/98	Meade et al.			
___ AI.	5,780,234	7/14/98	Meade et al.			
___ AJ.	5,780,448,	7/14/98	Davis et al.			
___ AK.	5,804,556	9/08/98	Carson et al.			
___ AL.	5,824,473	10/20/98	Meade et al.			
___ AM.	5,830,877	11/03/98	Carson et al.			

FOREIGN PATENT DOCUMENTS
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Document No.	Date	Country	Class	Sub-class	Translation (Yes/No)

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)
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___ AN.	DeMeester et al., "X-Ray Evidence for Adenine N(1)-Metal Bonding in a Cobalt-9-Methyladenine Complex," <i>Biochem. Biophys. Acta</i> , 324:301-303 (1973).
___ AO.	McCall et al., "Crystal Structure of a Zinc-(9-Methyladenine) Complex with N1 as the Preferred Binding Site," <i>Biochem. Biophys. Acta</i> , 390:137-139 (1975).
___ AP.	Swaminathan et al., "The Crystal Structures of Metal Complexes of Nucleic Acids and Their Constituents," <i>CRC Crit. Rev. Biochem. Mol. Biol.</i> , 14:245-336 (1979).
___ AQ.	Braun et al., "Immunogenic Duplex Nucleic Acids are Nuclease Resistant," <i>J. Immunol.</i> , 141(6):2084-2089 (1988).
___ AR.	Lever, <i>Inorganic Electronic Spectroscopy</i> , Elsevier, 503-542 (1988).
___ AS.	Cheung, "Resonance Energy Transfer," <i>Topics in Fluorescence Spectroscopy, Vol. 2: Principles</i> , Plenum (J.R. Lakowicz, ed.), 127-176 (1991).
___ AT.	Palecek, "Local Supercoil-Stabilized DNA Structures," <i>CRC Crit. Rev. Biochem. Mol. Biol.</i> , 26(2):151-226 (1991).
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___ AW.		Roesler et al., "The Liver-Enriched Transcription Factor D-Site-Binding Protein Activates the Promoter of the Phosphoenolpyruvate Carboxykinase Gene in Hepatoma Cells," <i>J. Biol. Chem.</i> , 267(29):21235-21243 (1992).	
___ AX.		Brunger, <i>X-PLOR Manual, Version 3.1: A System for X-Ray Crystallography and NMR</i> , Yale University Press, (1993).	
___ AY.		Lee et al., "A Cooperative Conformational Change in Duplex DNA Induced by Zn <sup>2+</sup> and Other Divalent Metal Ions," <i>Biochem. Cell Biol.</i> , 71:162-168 (1993).	
___ AZ.		Lilley et al., "The Structure of the Four-Way Junction in DNA," <i>Annu. Rev. Biophys. Biomol. Struct.</i> , 22:299-328 (1993).	
___ BA.		Murphy et al., "Long-Range Photoinduced Electron Transfer Through a DNA Helix," <i>Science</i> , 262:1025-1029 (1993).	
___ BB.		Seeman et al., "DNA Branched Junctions," <i>Annu. Rev. Biophys. Biomol. Struct.</i> , 23:53-86 (1994).	
___ BC.		Kessler, <i>Nonisotopic Probing, Blotting and Sequencing</i> , L.J. Kricka, Ed., Academic Press, 3-40 (1995).	
___ BD.		Arkin et al., "Rates of DNA-Mediated Electron Transfer Between Metallointercalators," <i>Science</i> , 273:475-480 (1996).	
___ BE.		Hall et al., "Oxidative DNA Damage Through Long-Range Electron Transfer," <i>Nature</i> , 382:731-735 (1996).	
___ BF.		Dandliker et al., "Oxidative Thymine Dimer Repair in the DNA Helix," <i>Science</i> , 275:1465-1468, (1997).	
___ BG.		Lewis et al., "Distance-Dependent Electron Transfer in DNA Hairpins," <i>Science</i> , 277:673-676 (1997).	
___ BH.		Taubes, "Double Helix Does Chemistry at a Distance-But How?" <i>Science</i> , 275:1420-1421 (1997).	
___ BI.		Haughland, <i>Handbook of Fluorescent Probes and Research Chemicals</i> , 6 <sup>th</sup> Ed., 157.	
EXAMINER		DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.